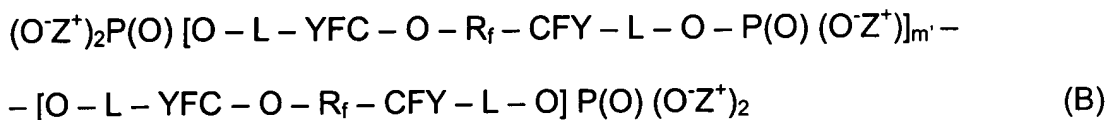


## **AMENDMENTS TO THE CLAIMS:**

1. (Currently Amended) A method for ~~easy~~ removal of ~~[[the]]~~ calcar deposits on a metal surface or its alloy, without abrasive or chemical systems, comprising:

treating pretreating a metal surface or its alloy to confer anti-calcar properties with a perfluoropolyether having a formula selected from:



wherein:

$m'$  is an integer from 0 to 20;

L is an organic group selected from  $-CH_2-(OCH_2CH_2)_n-$ ,  $-CO-NR'-(CH_2)_q-$ ,

with  $R' = H$  or  $C_1 - C_4$  alkyl;

$n = 0 - 8$ ,  $q = 1 - 8$ ;

$Z = H$ , alkaline metal or  $NR_4$  group with  $R = H$  or  $C_1 - C_4$  alkyl;  $Y = F, CF_3$ ;

$m = 1, 2, 3$ ;

W is a group  $-Si(R_1)_\alpha(OR_2)_{3-\alpha}$  with  $\alpha = 0, 1, 2$ ,  $R_1$  and  $R_2$  equal to or different from each other are  $C_1 - C_6$  alkyl groups optionally containing one or more ether O,  $C_6 - C_{10}$  aryl groups,  $C_7 - C_{12}$  alkyl-aryl or aryl-alkyl groups;

$R_f$  has a number average molecular weight in the range 350 - 8,000 and comprises repeating units having at least one of the following structures, statistically placed along the chain:

$(\text{CFXO}), (\text{CF}_2\text{CF}_2\text{O}), (\text{CF}_2\text{CF}_2\text{CF}_2\text{O}), (\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{O}),$

$(\text{CR}_4\text{R}_5\text{CF}_2\text{CF}_2\text{O}), (\text{CF}(\text{CF}_3)\text{CF}_2\text{O}), (\text{CF}_2\text{CF}(\text{CF}_3)\text{O}),$

wherein

$\text{X} = \text{F}, \text{CF}_3;$

$\text{R}_4$  and  $\text{R}_5$ , equal to or different from each other, are selected from H, Cl, or perfluoroalkyl having from 1 to 4 carbon atoms;

placing the pretreated metal surface or its alloy in an environment wherein calcar deposits adhere to the pretreated metal surface or its alloy;

and washing the pretreated metal surface or its alloy having the calcar deposits with a running water flow at room temperature to remove the calcar deposits from the pretreated metal surface or its alloy.

2. (Previously Presented) The method of claim 1, wherein  $\text{Rf}$  is selected from the following structures:

1)  $-(\text{CF}_2\text{O})_{a'}-(\text{CF}_2\text{CF}_2\text{O})_{b'}-$

with  $a'/b'$  in the range 0.5 – 2, extremes included,  $a'$  and  $b'$  being integers such as to give the above molecular weight;

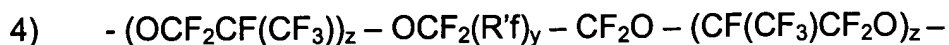
2)  $-(\text{C}_3\text{F}_6\text{O})_r-\text{C}_2\text{F}_4\text{O})_b-(\text{CFXO})_t-$

with  $r/b = 0.5 - 2.0$ ;  $(r+b)/t$  is comprised between 10 – 30,  $b$ ,  $r$  and  $t$  being integers such as to give the above molecular weight,  $\text{X}$  has the above meaning;

3)  $-(\text{C}_3\text{F}_6\text{O})_{r'}-(\text{CFXO})_{t'}-$

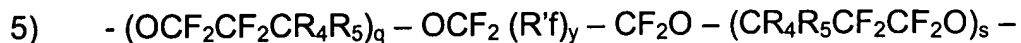
$t'$  can be 0;

when  $t'$  is different from 0 then  $r'/t' = 10 - 30$ ,  $r'$  and  $t'$  being integers such as to give the above molecular weight; X has the above meaning;



wherein  $z$  is an integer such that the molecular weight is the above one;

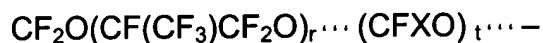
$y$  is an integer between 0 and 1 and  $\text{R}'\text{f}$  is a fluoroalkylene group;



wherein:

$q$  and  $s$  are integers such that the molecular weight is the above one;

$\text{R}_4$ ,  $\text{R}_5$ ,  $\text{R}'\text{f}$ ,  $y$  have the above meaning;



wherein  $r'''/t''' = 10 - 30$ ,

$r'''$  and  $t'''$  being integers such as to give the above molecular weight;

$\text{R}'\text{f}$  and  $y$  having the above meaning.

3. (Withdrawn) The method of claim 1, wherein in the compounds of structure (A) and (C) the end group of  $\text{R}_f$  is of the T-O- type, wherein T is a (per) fluoroalkyl group selected from:  $-\text{CF}_3$ ,  $-\text{C}_2\text{F}_5$ ,  $-\text{C}_3\text{F}_7$ ,  $-\text{CF}_2\text{Cl}$ ,  $-\text{C}_2\text{F}_4\text{Cl}$ ,  $-\text{C}_3\text{F}_6\text{Cl}$ ; optionally one or two F atoms can be substituted by H.

4. (Withdrawn) The method of claim 1, wherein a mixture of compounds (C) and (D) is used.

5. (Currently Amended) The method of claim 1, wherein the pretreatment is made by dipping, spin-coating, spraying, padding or brushing.

6. (Withdrawn) The method of claim 1, wherein the perfluoropolyether compounds of structure (C) and (D) are applied using formulations with solvent, solvent-water mixtures or prevailing aqueous formulations.

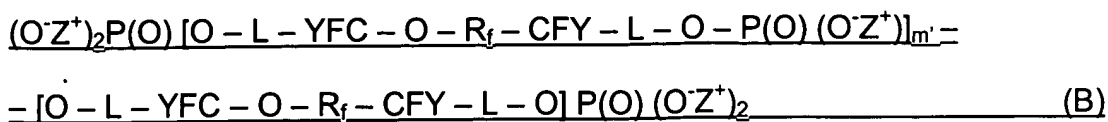
7. (Withdrawn) The method of claim 6, wherein the concentration of the perfluoropolyether compounds of structure (C) and (D) in the formulation is in the range 0.01 – 15% by weight.

8. (Previously Presented) The method of claim 1, wherein the perfluoropolyether compounds of structure (A) and (B) are applied using aqueous formulations or formulations having a polar solvent.

9. (Previously Presented) The method of claim 8, wherein the formulation contains an amount by weight of perfluoropolyether compound of structure (A) and (B) in the range 0.1 – 10% by weight

10. (Currently Amended) A method of conferring anti-corrosive properties to metal substrata and their alloys comprising applying a ~~application of the mono and bi-functional (per)fluoropolyether compounds of claim 1~~ having a formula selected from:





wherein:

$m'$  is an integer from 0 to 20;

$\text{L}$  is an organic group selected from  $-\text{CH}_2 - (\text{OCH}_2\text{CH}_2)_n -$ ,  $-\text{CO} - \text{NR}' - (\text{CH}_2)_q -$ ,

with  $\text{R}' = \text{H}$  or  $\text{C}_1 - \text{C}_4$  alkyl;

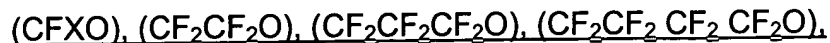
$n = 0 - 8$ ,  $q = 1 - 8$ ;

$\text{Z} = \text{H}$ , alkaline metal or  $\text{NR}_4$  group with  $\text{R} = \text{H}$  or  $\text{C}_1 - \text{C}_4$  alkyl;  $\text{Y} = \text{F}$ ,  $\text{CF}_3$ ;

$m = 1, 2, 3$ ;

$\text{W}$  is a group  $-\text{Si}(\text{R}_1)_\alpha (\text{OR}_2)_{3-\alpha}$  with  $\alpha = 0, 1, 2$ ,  $\text{R}_1$  and  $\text{R}_2$  equal to or different from each other are  $\text{C}_1 - \text{C}_6$  alkyl groups optionally containing one or more ether  $\text{O}$ ,  $\text{C}_6 - \text{C}_{10}$  aryl groups,  $\text{C}_7 - \text{C}_{12}$  alkyl - aryl or aryl -alkyl groups;

$\text{R}_f$  has a number average molecular weight in the range 350 - 8,000 and comprises repeating units having at least one of the following structures, statistically placed along the chain:



wherein

$\text{X} = \text{F}$ ,  $\text{CF}_3$ ;

$\text{R}_4$  and  $\text{R}_5$ , equal to or different from each other, are selected from  $\text{H}$ ,  $\text{Cl}$ , or perfluoroalkyl having from 1 to 4 carbon atoms.

11. (Withdrawn) The method of claim 10, wherein the perfluoropolyether compounds have structure (C) and (D).

12. (Previously Presented) The method of claim 1 wherein  $m'$  is an integer from 0 to 4.

13. (Previously Presented) The method of claim 1 wherein  $n = 1 - 3$ .

14. (Previously Presented) The method of claim 1 wherein  $q = 1 - 3$ .

15. (Previously Presented) The method of claim 1 wherein  $m = 1$  or 2.

16. (Previously Presented) The method of claim 1 wherein  $R_f$  has a number average molecular weight in the range 500 – 3,000.

17. (Previously Presented) The method of claim 2 wherein  $R'_f$  is a fluoroalkylene group having 1 – 4 carbon atoms.

18. (Withdrawn) The method of claim 3, wherein in T, one F atom is substituted by H.

19. (Withdrawn) The method of claim 7, wherein the concentration of the perfluoropoly ether compounds of structure (C) and (D) in the formulation is in the range 0.1 - 5% by weight.

20. (Previously Presented) The method of claim 9, wherein the amount by weight or weight of perfluoropolymer compound of structure (A) and (B) is in the range 0.5 – 5%.